

What is Claimed is:

1. A method for handing over wireless communications in a satellite communications system, the satellite communications system comprising a satellite that is configured to wirelessly communicate with radioterminals in a satellite coverage area over a satellite frequency band, and an ancillary terrestrial component that is configured to wirelessly communicate with radioterminals in the satellite coverage area over at least some of the satellite frequency band, to thereby terrestrially reuse at least some of the satellite frequency band, the handover method comprising:
 - 10 handing over wireless communications with a radioterminal from the ancillary terrestrial component to the satellite if the radioterminal transmit power exceeds a threshold and a received satellite signal quality exceeds a threshold, even though the radioterminal is able to wirelessly communicate with the ancillary terrestrial component.
 - 15 2. A method according to Claim 1 wherein handing over comprises handing over wireless communications with the radioterminal from the ancillary terrestrial component to the satellite if the radioterminal transmit power exceeds a threshold, an aggregate radioterminal interference exceeds a limit, and the received satellite signal quality exceeds a threshold, even though the radioterminal is able to wirelessly communicate with the ancillary terrestrial component.
 - 25 3. A method according to Claim 1 wherein handing over comprises handing over wireless communications with the radioterminal from the ancillary terrestrial component to the satellite if the radioterminal transmit power exceeds a threshold, the received satellite signal quality exceeds a threshold and the radioterminal is at least a predetermined distance away from the ancillary terrestrial component, even though the radioterminal is able to wirelessly communicate with the ancillary terrestrial component.
 - 30 4. A method according to Claim 1 wherein the radioterminals are further configured to wirelessly communicate with a cellular/PCS base station in a cellular/PCS coverage area and wherein handing over further comprises handing over wireless communications with the radioterminal from the ancillary terrestrial

component to the cellular/PCS base station if the radioterminal transmit power exceeds a threshold, a received satellite signal quality is below a threshold and the radioterminal is at least a predetermined distance away from the ancillary terrestrial component, even though the radioterminal is able to wirelessly communicate with the ancillary terrestrial component.

5. A method according to Claim 1 wherein the radioterminals are further configured to wirelessly communicate with a cellular/PCS base station in a cellular/PCS coverage area and wherein handing over further comprises handing over wireless communications with the radioterminal from the ancillary terrestrial component to the satellite and/or to the cellular/PCS base station if the radioterminal transmit power exceeds a threshold, a received satellite signal quality exceeds a threshold and the radioterminal is at least a predetermined distance away from the ancillary terrestrial component, even though the radioterminal is able to wirelessly communicate with the ancillary terrestrial component.

6. A method according to Claim 1 wherein handing over comprises handing over wireless communications with the radioterminal from the ancillary terrestrial component to the satellite if the radioterminal transmit power exceeds a threshold, an aggregate radioterminal interference exceeds a limit, the received satellite signal quality exceeds a threshold and the radioterminal is at least a predetermined distance away from the ancillary terrestrial component, even though the radioterminal is able to wirelessly communicate with the ancillary terrestrial component.

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7. A method according to Claim 1 wherein handing over comprises handing over wireless communications with the radioterminal from the ancillary terrestrial component to the satellite if the radioterminal transmit power exceeds a threshold, an aggregate radioterminal interference exceeds a limit and the received satellite signal quality exceeds a threshold, independent of a position of the radioterminal relative to the ancillary terrestrial component, even though the radioterminal is able to wirelessly communicate with the ancillary terrestrial component.

8. A method according to Claim 1 wherein the radioterminals are further configured to wirelessly communicate with a cellular/PCS base station in a cellular/PCS coverage area and wherein handing over further comprises handing over wireless communications with the radioterminal from the ancillary terrestrial component to the cellular/PCS base station if the radioterminal transmit power exceeds a threshold, a received satellite signal quality is below a threshold, an aggregate radioterminal interference exceeds a limit and the radioterminal is at least a predetermined distance away from the ancillary terrestrial component, even though the radioterminal is able to wirelessly communicate with the ancillary terrestrial component.

9. A method according to Claim 1 wherein the radioterminals are further configured to wirelessly communicate with a cellular/PCS base station in a cellular/PCS coverage area and wherein handing over further comprises handing over wireless communications with the radioterminal from the ancillary terrestrial component to the satellite and/or to the cellular/PCS base station if the radioterminal transmit power exceeds a threshold, a received satellite signal quality exceeds a threshold, an aggregate radioterminal interference exceeds a limit and the radioterminal is at least a predetermined distance away from the ancillary terrestrial component, even though the radioterminal is able to wirelessly communicate with the ancillary terrestrial component.

10. A method according to Claim 2 wherein the radioterminal is configured to determine whether the radioterminal interference exceeds a limit by monitoring downlink wireless radiation that is received at the radioterminal from a satellite, to thereby determine potential interference created by the uplink radiation of the radioterminal due to the terrestrial reuse of at least some of the satellite frequency band.

30 11. A method according to Claim 10 wherein monitoring comprises monitoring power of a downlink wireless signal that is received at the radioterminal from a satellite, to thereby determine potential interference created by the uplink radiation of the radioterminal due to the terrestrial reuse of at least some of the satellite frequency band.

12. A method according to Claim 11 wherein the downlink wireless signal comprises a broadcast control channel signal.

5 13. A method for monitoring interference in a satellite communications system, the satellite communications system comprising a satellite that is configured to wirelessly communicate with radioterminals in a satellite coverage area over a satellite frequency band, and an ancillary terrestrial component that is configured to wirelessly communicate with radioterminals in the satellite coverage area over at least 10 some of the satellite radioterminal frequency band, to thereby terrestrially reuse at least some of the satellite frequency band, the monitoring method comprising:

monitoring downlink wireless radiation that is received at a radioterminal from a satellite, to thereby determine potential interference created by the uplink radiation of the radioterminal due to the terrestrial reuse of at least some of the satellite 15 frequency band.

14. A method according to Claim 13 wherein monitoring comprises monitoring power of a downlink wireless signal that is received at the radioterminal from a satellite, to thereby determine potential interference created by the uplink 20 radiation of the radioterminal due to the terrestrial reuse of at least some of the satellite frequency band.

15. A method according to Claim 14 wherein the downlink wireless signal comprises a broadcast control channel signal.

25 16. A method according to Claim 13 wherein monitoring is performed by the radioterminals, the method further comprising:

aggregating the potential interferences created by the aggregate uplink radiation of the radioterminals due to the terrestrial reuse of at least some of the 30 satellite frequency band.

17. A method according to Claim 16 further comprising:

adjusting at least some of the radioterminals and/or the ancillary terrestrial component to reduce the aggregate uplink radiation of the radioterminals to below a limit.

- 5 18. A wireless communications system comprising:
 a satellite that is configured to wirelessly communicate with radioterminals in a satellite coverage area over a satellite frequency band;
 an ancillary terrestrial component that is configured to wirelessly communicate with radioterminals in the satellite coverage area over at least some of
10 the satellite frequency band, to thereby terrestrially reuse at least some of the satellite frequency band; and
 a controller that is configured to hand over wireless communications with a radioterminal from the ancillary terrestrial component to the satellite if the radioterminal transmit power exceeds a threshold and a received satellite signal
15 quality exceeds a threshold, even though the radioterminal is able to wirelessly communicate with the ancillary terrestrial component.
19. A system according to Claim 18 wherein the controller is further configured to hand over wireless communications with the radioterminal from the ancillary terrestrial component to the satellite if the radioterminal transmit power exceeds a threshold, an aggregate radioterminal interference exceeds a limit, and the received satellite signal quality exceeds a threshold, even though the radioterminal is able to wirelessly communicate with the ancillary terrestrial component.
- 25 20. A system according to Claim 18 wherein the controller is further configured to hand over wireless communications with the radioterminal from the ancillary terrestrial component to the satellite if the radioterminal transmit power exceeds a threshold, the received satellite signal quality exceeds a threshold and the radioterminal is at least a predetermined distance away from the ancillary terrestrial component, even though the radioterminal is able to wirelessly communicate with the ancillary terrestrial component.
21. A system according to Claim 18 wherein the radioterminals are further configured to wirelessly communicate with a cellular/PCS base station in a

cellular/PCS coverage area and wherein the controller is further configured to hand over wireless communications with the radioterminal from the ancillary terrestrial component to the cellular/PCS base station if the radioterminal transmit power exceeds a threshold, a received satellite signal quality is below a threshold and the
5 radioterminal is at least a predetermined distance away from the ancillary terrestrial component, even though the radioterminal is able to wirelessly communicate with the ancillary terrestrial component.

22. A system according to Claim 18 wherein the radioterminals are further
10 configured to wirelessly communicate with a cellular/PCS base station in a cellular/PCS coverage area and wherein the controller is further configured to hand over wireless communications with the radioterminal from the ancillary terrestrial component to the satellite and/or to the cellular/PCS base station if the radioterminal transmit power exceeds a threshold, a received satellite signal quality exceeds a
15 threshold and the radioterminal is at least a predetermined distance away from the ancillary terrestrial component, even though the radioterminal is able to wirelessly communicate with the ancillary terrestrial component.

23. A system according to Claim 18 wherein the controller is further
20 configured to hand over wireless communications with the radioterminal from the ancillary terrestrial component to the satellite if the radioterminal transmit power exceeds a threshold, an aggregate radioterminal interference exceeds a limit, the received satellite signal quality exceeds a threshold and the radioterminal is at least a predetermined distance away from the ancillary terrestrial component, even though
25 the radioterminal is able to wirelessly communicate with the ancillary terrestrial component.

24. A system according to Claim 18 wherein the controller is further
configured to hand over wireless communications with the radioterminal from the
30 ancillary terrestrial component to the satellite if the radioterminal transmit power exceeds a threshold, an aggregate radioterminal interference exceeds a limit and the received satellite signal quality exceeds a threshold, independent of a position of the radioterminal relative to the ancillary terrestrial component, even though the

radioterminal is able to wirelessly communicate with the ancillary terrestrial component.

25. A system according to Claim 18 wherein the radioterminals are further
5 configured to wirelessly communicate with a cellular/PCS base station in a
cellular/PCS coverage area and wherein the controller is further configured to hand
over wireless communications with the radioterminal from the ancillary terrestrial
component to the cellular/PCS base station if the radioterminal transmit power
exceeds a threshold, a received satellite signal quality is below a threshold, an
10 aggregate radioterminal interference exceeds a limit and the radioterminal is at least a
predetermined distance away from the ancillary terrestrial component, even though
the radioterminal is able to wirelessly communicate with the ancillary terrestrial
component.

15 26. A system according to Claim 18 wherein the radioterminals are further
configured to wirelessly communicate with a cellular/PCS base station in a
cellular/PCS coverage area and wherein the controller is further configured to hand
over wireless communications with the radioterminal from the ancillary terrestrial
component to the satellite and/or to the cellular/PCS base station if the radioterminal
20 transmit power exceeds a threshold, a received satellite signal quality exceeds a
threshold, an aggregate radioterminal interference exceeds a limit and the
radioterminal is at least a predetermined distance away from the ancillary terrestrial
component, even though the radioterminal is able to wirelessly communicate with the
ancillary terrestrial component.

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27. A system according to Claim 19 in combination with a radioterminal,
wherein the radioterminal is configured to determine whether the radioterminal
interference exceeds a limit by monitoring downlink wireless radiation that is
received at the radioterminal from a satellite, to thereby determine potential
30 interference created by the uplink radiation of the radioterminal due to the terrestrial
reuse of at least some of the satellite frequency band.

28. A system according to Claim 27 wherein the radioterminal is
configured to monitor downlink radiation by monitoring power of a downlink

wireless signal that is received at the radioterminal from a satellite, to thereby determine potential interference created by the uplink radiation of the radioterminal due to the terrestrial reuse of at least some of the satellite frequency band.

5 29. A system according to Claim 28 wherein the downlink wireless signal comprises a broadcast control channel signal.

30. A satellite communications system comprising:
a satellite that is configured to wirelessly communicate with radioterminals in
10 a satellite coverage area over a satellite frequency band;
an ancillary terrestrial component that is configured to wirelessly communicate with radioterminals in the satellite coverage area over at least some of the satellite radioterminal frequency band, to thereby terrestrially reuse at least some of the satellite frequency band; and
15 a radioterminal that is configured to monitor downlink wireless radiation that is received at the radioterminal from a satellite, to thereby determine potential interference created by the uplink radiation of the radioterminal due to the terrestrial reuse of at least some of the satellite frequency band.

20 31. A system according to Claim 30 wherein the radioterminal is configured to monitor downlink wireless radiation by monitoring power of a downlink wireless signal that is received at the radioterminal from a satellite, to thereby determine potential interference created by the uplink radiation of the radioterminal due to the terrestrial reuse of at least some of the satellite frequency
25 band.

32. A system according to Claim 31 wherein the downlink wireless signal comprises a broadcast control channel signal.

30 33. A system according to Claim 30 further comprising:
a controller that is configured to aggregate the potential interferences created by the aggregate uplink radiation of the radioterminals due to the terrestrial reuse of at least some of the satellite frequency band.

34. A system according to Claim 33 wherein the controller is further configured to adjust at least some of the radioterminals and/or the ancillary terrestrial component to reduce the aggregate uplink radiation of the radioterminals to below a limit.